

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 109512/AF		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA416
International application No. PCT/NO2004/000163		International filing date (day/month/year) 07.06.2004	Priority date (day/month/year) 05.06.2003	
International Patent Classification (IPC) or national classification and IPC H02J3/14				
Applicant ENFO BROADCAST AS et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 8 sheets, as follows:</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 20px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  05.04.2005		Date of completion of this report  15.11.2005		
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Gentili, L  Telephone No. +31 70 340-2872		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/NO2004/000163

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-48 as originally filed

**Claims, Numbers**

1-42 received on 28.10.2005 with letter of 19.10.2005

**Drawings, Sheets**

1/20-20/20 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/NO2004/000163

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-35,37-39,41,42
	No: Claims	36,40
Inventive step (IS)	Yes: Claims	1-35
	No: Claims	36-42
Industrial applicability (IA)	Yes: Claims	1-42
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following document, not cited in the search report:

D3 = DE19850496 A1

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 36 and 40 is not new in the sense of Article 33(2) PCT.

The document D3 discloses (the references in parentheses applying to this document):  
a control broadcast signal (the long-wave signal broadcasted from the sender 6) for providing operator information to specialized electronic boxes ("Längswellenempfänger", see column 2 lines 44-50) at End-users' premises, thereby to enable automatic management of demand for non-durables provided by a Multy Utility provider (column 2 lines 50-54), said signal containing at least one of pricing information and rationing information regarding amount of consumption reduction (the signal of D3 contains as pricing information the actual energy tariff, see also column 3 lines 6-10).

Claim 36 is thus anticipated by D3.

Document D3 discloses also, in a system for automatic management of demand (column 2 lines 44-54) for non-durables, in which system a Multy Utility provider transmits control signals to a plurality of End-users on a broadcast channel (via long-wave sender 6), a data communication signal (a signal on the ISDN network, see column 2 lines 54-68) for providing End-user return information ("Zählerstandsabfrage") to said Multi Utility provider, thereby to enable non-durables delivery control and pricing influenced by demand (column 2 lines 1-10), said signal containing at least non-durables consumption information (consumption measured by counters 1) and using a signal channel (ISDN network) different from said broadcast channel.

Claim 40 is thus anticipated by D3.

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 37-39 and 41,42 does not involve an inventive step in the sense of

Article 33(3) PCT.

Claims 37-39 obviously refer to well known techniques in the field of signal broadcasting and are considered to fall within the range of daily design routine of the skilled person.

The document D3 is regarded as being the closest prior art to the subject-matter of claim 41, and discloses (the references in parentheses applying to this document):

a method for return signalling in a two way communication network between a Multi Utility provider (5) and a plurality of End-users (1) having intelligent home gateways and metering point gateways (combined in "Zählerplatz 1", see column 4 lines 26-32) wherein a broadcast signal wakes up one End-user's gateways at a time for collecting non-durables consumption data (column 3 lines 57-66), and telephone connection is established to said Multi Utility provider for delivering said data (column 2 lines 54-67).

Subject matter of claim 41 thus differs from such known method only in that telephone connection is established by using a SIM card that is identical for all users, and not by using a modem or an ISDN terminal adapter.

However, the use of a SIM card in place of a modem or a terminal adapter is an obvious alternative which does not provide any difficult to foresee advantage, for the skilled person, who would thus not need to employ an inventive activity in order obtain subject matter of claim 41.

Document D3 discloses a method for automatic management of demand for non-durables (see passages already cited in reference to claims 36,40-42) from which subject matter of claim 1 differs in that the electronic boxes calculate ON or OFF correct condition also on the basis of End-user adjustable parameter user settings.

Since D3 gives no hint to the inclusion of this feature, which gives a practical effect to the End-user, it can be considered that claim 1 fulfils the requirements for novelty (Article 33(2) PCT) and inventive step (Article 33(3) PCT).

The same applies, mutatis mutandis, to independent system claim 20 and to dependent claims 2-19 and 21-35.

## REVISED CLAIMS

1. A method for automatic management of demand for non-durables, said method comprising

- 5 - providing at End-users' premises specialized electronic boxes having microprocessor capability for performing the following functions:
  - receiving broadcast control signals from a Multi Utility provider,
  - calculating whether ON or OFF constitutes a correct condition for any connected non-durable consuming apparatus, on the basis of information
  - 10 contained in said broadcast control signals, stored algorithms and End-user adjustable parameter value settings,
  - turning connected non-durable consuming apparatuses on and off in accordance with the results of said calculating,
  - End-users programming said boxes by setting parameter values in accordance
  - 15 with End-users' priorities,
  - broadcasting from a Multi Utility provider a control signal to be received by said boxes,
  - said boxes taking automatic turn-off or turn-on action for some non-durable consuming apparatuses in accordance with stored control algorithms, parameter
  - 20 values set by said End-users and information provided by said control signal, and
  - said boxes transmitting back to said Multi Utility provider instant or semi-instant non-durable consumption values at said End-users' premises, thereby collectively influencing market pricing of said non-durables.

2. The method of claim 1,  
wherein said End-users set parameter values in accordance with estimated importance of their various apparatuses.

3. The method of claim 1,  
30 wherein said End-users set parameter values based on pricing of the non-durables.

4. The method of claim 1,  
wherein said Multi Utility provider broadcasts a control signal containing pricing information regarding said non-durables.

5. The method of claim 4,  
wherein the control signal contains pricing information regarding pricing valid for a certain time period.

5 6. The method of claim 1,  
wherein said Multi Utility provider broadcasts a control signal containing information regarding rationing.

10 7. The method of claim 1,  
wherein said Multi Utility provider provides at least one of electrical energy, thermal energy, gas and fresh water to a community of End-users.

15 8. The method of claim 1,  
wherein said Multi Utility provider broadcasts the control signal via at least one commercial radio broadcasting station.

20 9. The method of claim 8,  
wherein said commercial radio broadcasting station utilizes any one of the RDS, RBDS and DAB systems for broadcasting the control signal.

10. The method of claim 1,  
wherein said Multi Utility provider broadcasts the control signal via a satellite radio broadcast system.

25 11. The method of claim 1,  
wherein said boxes transmit back consumption values via any of a telephone network and a mobile telephone network.

30 12. The method of claim 1,  
wherein communication between said electronic boxes and said non-durable consuming apparatuses inside said End-users' premises is effected by use of PLC technology, preferably in accordance with an X10 standard.

13. The method of claim 1,

wherein any one of said electronic boxes is physically or functionally divided in an intelligent home gateway and a metering gateway,

said intelligent home gateway receiving said control signals, decoding them,

5 calculating ON and OFF conditions for all connected apparatuses and transmitting

turn-off and turn-on commands to bring said apparatuses into the calculated

condition, while also communicating with said metering gateway, and

said metering gateway performing two-way communication with said intelligent home gateway, performing communication with at least one non-durables metering device,

10 and transmitting at least metering data to said Multi Utility provider.

14. The method of claim 13,

wherein said intelligent home gateway transmits commands for turning connected apparatuses in an End-user's premises off and on, via a Power Line Carrier (PLC)

15 system, preferably an X10 system.

15. The method of claim 13,

wherein said intelligent home gateway turns off connected apparatuses in an End-user's premises in accordance with non-durable price thresholds set by the End-user

20 for respective apparatuses or for respective apparatus groups.

16. The method of claim 13,

wherein said intelligent home gateway turns off connected apparatuses in an End-user's premises in accordance with a rationing command from said Multi Utility

25 provider and non-durable consuming apparatus priority settings entered by the End-user.

17. The method of claim 1,

wherein non-durables production in distributed generation units (DG) attached to any

30 of industrial End-users, commercial End-users and groups/communities of private

End-users, is governed by said electronic boxes and in accordance with the End-users' settings and priorities.



18. The method of claim 17,

wherein a distributed generation unit (DG) attached to a group/community of private End-users is governed by an algorithm taking all said private End-users' settings and priorities into consideration, said algorithm being stored in a computer memory in a computer dedicated for controlling said distributed generation unit and being in communication with said electronic boxes.

19. The method of claim 1,

wherein service restoration from said Multi Utility provider after an outage situation is effected by broadcasting restoration signals to bring about step-wise turning on loads at End-users' premises by appropriate action by said electronic boxes.

20. A system for automatic management of demand for non-durables, said system comprising

- specialized electronic boxes at End-users' premises, with microprocessor capability for performing the following functions:
  - receiving broadcast control signals from a Multi Utility provider,
  - calculating whether ON and OFF constitutes a correct condition for any connected non-durable consuming apparatus, on the basis of information contained in said broadcast control signals, stored algorithms and End-user adjustable parameter value settings,
  - turning connected non-durable consuming apparatuses on and off in accordance with the results of said calculating.

said system further comprising

- non-durable consumption metering devices at said End-users' premises, in communication with said electronic boxes, and
- a broadcasting network for broadcasting from a Multi Utility provider a control signal to be received by said electronic boxes,

wherein

- said specialized electronic boxes are programmable by said End-users for setting parameter values in accordance with said End-users' priorities,
- said boxes are operative to take automatic turn-off and turn-on action for some non-durable consuming apparatuses in accordance with stored control

algorithms, said parameter values and information provided by said control signal, and

- said boxes have transmitting capability for transmitting back to said Multi Utility provider instant or semi-instant non-durable consumption values, thereby to collectively influence market pricing of said non-durables.

21. The system of claim 20,  
wherein said broadcasting network is a commercial radio broadcasting network.

22. The system of claim 20,  
wherein said broadcasting network is a satellite radio broadcast system.

23. The system of claim 20,  
wherein a return transmission path for transmitting back said consumption values is via any of a telephone network and a mobile telephone network.

24. The system of claim 20,  
wherein a communication path between said electronic boxes and said non-durable consuming apparatuses in said End-users' premises is a wire path, preferably relying on PLC technology and an X10 standard.

25. The system of claim 20,  
wherein said broadcasting network includes microprocessor capability for encrypting data to be broadcast to End-users.

26. The system of claim 20,  
including distributed generation units (DG) for additional production of non-durables, attached to any of industrial End-users, commercial End-users and groups/communities of private End-users, said distributed generation units being governed by said electronic boxes and in accordance with the End-users' setting and priorities.

27. The system of claim 20,

wherein any one of said specialized electronic boxes is physically or functionally divided in an intelligent home gateway and a metering gateway, said intelligent home gateway being capable of receiving said control signals, decoding them, calculating

5 ON and OFF conditions for all connected apparatuses and transmitting turn-off and turn-on commands to bring said apparatuses into the calculated condition, as well as communicating with said metering gateway, and

said metering gateway being capable of performing two-way communication with said intelligent home gateway, performing communication with at least one non-

10 durables metering device, and transmitting at least metering data to said Multi Utility provider.

28. The system of claim 27,

wherein the intelligent home gateway includes at least one of a microprocessor and  
15 an embedded controller.

29. The system of claim 28,

wherein an End-user terminal is attached to said intelligent home gateway for presentation of messages to the End-user, decoded by said microprocessor.

30. The system of claim 27,

wherein the intelligent home gateway includes a radio antenna and a radio signalling decoder for at least one of the RDS, RBDS and DAB systems.

31. The system of claim 27,

wherein the intelligent home gateway has connected thereto a satellite reception antenna for receiving a satellite broadcast signal.

32. The system of claim 27,

wherein the metering gateway includes a microprocessor for decoding information  
30 from the intelligent home gateway and from said metering devices.

33. The system of claim 20,  
wherein said non-durable is electric power, said Multi Utility provider is an Electrical  
Utility provider and said consumption metering devices are electricity meters.

5 34. A computer program product containing any of software code portions and  
computer program elements which, when said computer program product is run on  
any of a computer, processor and controller, causes said computer processor or  
controller to carry out those steps of the method according to claim 1 that are  
executed by said electronic boxes.

10

35. The computer program product of claim 34 included in a computer readable  
medium.

15

36. A control broadcast signal for providing operator information to specialized  
electronic boxes at End-users' premises, thereby to enable automatic management  
of demand for non-durables provided by a Multi Utility provider, said signal containing  
at least one of pricing information and rationing information regarding amount of  
consumption reduction.

20

37. The control broadcast signal of claim 36,  
wherein the operator information is contained in  
- a data field,  
- a command field and  
- an address field.

25

38. The control broadcast signal of claim 37,  
wherein said data field is to hold at least pricing data and said command field is to  
hold at least rationing command instructions, if any, and the address field is to hold at  
least data regarding which electronic boxes should respond to contents of the data  
field and the command field.

30

39. The control broadcast signal of claim 36, wherein said signal is an encrypted  
signal.

40. In a system for automatic management of demand for non-durables, in which system a Multi Utility provider transmits control signals to a plurality of End-users on a broadcast channel, a data communication signal for providing End-user return information to said Multi Utility provider, thereby to enable non-durables delivery control and pricing influenced by demand, said signal containing at least non-durables consumption information and using a signal channel different from said broadcast channel.

41. A method for return signalling in a two-way communication network between a Multi Utility Provider and a plurality of End-users having intelligent home gateways and metering point gateways, wherein a broadcast signal wakes up one End-user's gateways at a time for collecting non-durables consumption data, and a SIM card that is identical for all End-users, is used for establishing telephone or cellular connection to said Multi Utility Provider for delivering said data.

42. An apparatus for return signalling in a two-way communication network between a Multi Utility Provider and a plurality of End-users, said apparatus being an apparatus at each End-user's premises and comprising

an Intelligent home gateway operative to receive a wake-up broadcast signal that triggers metering action, and  
a metering point gateway operative to establish telephone or cellular connection to said Multi Utility Provider by means of a SIM card that is identical for all End-users, for delivering metering data regarding the respective End-user's consumption of non-durables.